

To meet that shortfall, the Air Force has proposed to install new-generation CFM-56 engines on existing KC-135 tankers. With these more powerful and more efficient engines, the tankers could carry greater fuel payloads while using less fuel for their own operations.

In the past year, an alternative re-engining program has been proposed that would install older engines currently used on 707s that are being retired from commercial service. These older engines (designated JT3Ds) would be thoroughly overhauled and checked before installation. The JT3D does not match all the performance characteristics of the CFM-56, but is substantially better than existing engines on the KC-135s. Air Force performance data indicate that the JT3D engine is an effective substitute for the CFM-56 on a large number of SAC refueling missions. It is dramatically more attractive on acquisition cost grounds: where the CFM-56 re-engining would cost approximately \$19.3 million (in constant 1983 dollars) per aircraft, the JT3D modification would cost \$6.9 million.

If the Congress were to terminate the CFM-56 re-engining program in favor of re-engining 192 aircraft with the JT3D engine, this could save \$5.3 billion in budget authority over the next five years relative to possible Administration plans (see Table III-3 and Table C-2 in Appendix C). Enough JT3D engines should be available to accomplish this program. 7/

This approach would provide, at one-fourth to one-third the cost, about 95 percent of the refueling capability of the Administration program through the 1980s, when demands will be at a peak. Both this option and the Administration program should meet all demands by 1990, when changes in the types of aircraft and their missions will result in lower refueling requirements.

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7. In planning for fiscal year 1983, the Air Force actively considered buying 96 JT3D-fitted aircraft. The Congress could direct the Air Force to pursue this option, buying 96 aircraft from U.S. carriers. Purchases beyond the 96 could well be more difficult and expensive, though by 1985 they should be readily available; environmental and noise regulations that take effect in 1985 prevent their use in commercial operations.

The JT3D-modified tanker would not equal the full potential performance of the CFM-56, however, and on certain missions their performance differences are substantial. Thus the CFM-56 provides more flexibility of response to possible changes in missions. The CFM-56 is also about twice as quiet as the JT3D, which in some areas near cities may be an important feature. 8/

#### Shifting Program Emphasis to Improve U.S. Projection Forces

In the last decade, defense programs have emphasized the need to strengthen NATO defenses. To that end, the United States launched major programs to procure new equipment and induce modernization efforts by its allies. Recently, however, many defense analysts have felt that a NATO conflict, while certainly the most stressful contingency for planning purposes, has become less likely; they feel that the chances of conflict are now greater in peripheral areas. Indeed, Secretary Weinberger has reportedly suggested that U.S. confrontation with the Soviet Union, if it were to occur, would soon become global in scale, necessitating more numerous, though perhaps somewhat less capable, U.S. forces. This emphasis may suggest some alternative approaches to modernizing defense forces.

Modify and Expand the Navy Battle Group Structure. For many years, the Navy has maintained continuous peacetime carrier battle group deployments in the Western Pacific and Mediterranean Sea areas. Recently, especially with tensions in the Persian Gulf region, the Navy has had to deploy carrier battle groups in the Indian Ocean while attempting to maintain its traditional force deployments elsewhere. Such extended deployments keep ships on station for longer periods and adversely affect maintenance, training, and rotation schedules. The Navy has argued that its current global commitments necessitate an expansion of carrier battle groups.

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8. One of the reasons JT3D engines are becoming available is that they cannot meet future noise and pollution standards for commercial jet aircraft in the mid-1980s. DoD is exempted from those regulations, however. And the JT3D is still substantially quieter than the current engines on the tankers.

The Navy has indicated its objective to increase the number of deployable carrier battle groups from the present 12 to 15, requiring an increase of three aircraft carriers and three carrier air wings in the active fleet. <sup>9/</sup> To that end the Administration may propose authorization over the next five years of two additional nuclear-powered carriers (CVNs), which would be delivered in the early 1990s or perhaps earlier. It also plans to reactivate four Iowa-class battleships and fit them with about 30 cruise missiles each.

As an alternative to the Administration plan, the Congress could direct the Navy to retain its present posture of 12 deployable carriers and form four additional battle groups around the four reactivated battleships. The two new carriers planned for the next five years would not be procured. Over the next five years, savings from this approach would amount to about \$7 billion in budget authority relative to the possible Administration program (see Table III-3 and Table C-3 in Appendix C). Eventually, procurement savings under this option would equal almost \$37 billion (in constant 1983 dollars). The \$37 billion reflects savings from avoiding procurement of three carriers and their aircraft plus 12 escort ships (see Table C-3 in Appendix C). The saving might be partially offset if a decision were made to provide some aircraft capability and aircraft on the battleships.

This approach would expand the number of deployable battle groups from 12 to 16 by the mid-1980s compared with 15 in the early 1990s under the Navy objective. These new battleship battle groups would expand the ability to support peacetime deployments and could

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9. The precise plan to build a 15-carrier force has not been spelled out. Initially, Navy plans called for retaining the two oldest active carriers--the Midway and the Coral Sea--through the 1980s rather than retiring them as the two carriers currently under construction were deployed. They would be retired later, probably when two additional carriers to be authorized in the 1980s are delivered to the Navy. Keeping the Midway and the Coral Sea, plus the two carriers now under construction, would increase the number of deployable carriers to 14 in the 1980s. To get to 15, the Navy planned to reactivate a mothballed carrier, the Oriskany. The Congress canceled plans for the Oriskany.

be used in appropriate combat environments, such as support of amphibious operations, during wartime. For offensive strikes, in contrast to the tactical aircraft used from aircraft carriers, the battleships would use their cruise missiles as well as their existing 16-inch guns.

To maximize the autonomy and flexibility of the battleships, modification plans in the late 1980s could include a flight deck and support facilities for a detachment of vertical/short-take-off-and-landing (V/STOL) aircraft or helicopters. But even without such facilities, the modified battleships could operate with the support of land-based aircraft, helicopters from accompanying destroyers and cruisers, and, in the future, aircraft from new large amphibious ships (LHAs or LHDs) that could support V/STOL or helicopter operations.

Although more aircraft carriers are clearly desirable for any war-fighting situation, the justification for increasing the number of carriers in the fleet is based in part upon the need to support worldwide U.S. peacetime deployment commitments. Arguably, it is not really necessary to support all of these deployment commitments with aircraft carriers. The battleships are large, impressive ships capable of establishing a credible U.S. naval presence. Rather than maintaining two carriers in the Indian Ocean, for example, the Navy could use one carrier battle group and one battleship battle group. A battleship battle group would be as powerful as the Soviet battle groups now deployed in the Indian Ocean and far more capable when paired with an aircraft carrier. In this way the battleships would be performing a logical and useful role, and they could be made available about five years sooner than new aircraft carriers. Such an alternative will be much more responsive to the need for relatively near-term expansion of the global naval force projection.

Battleships are not as powerful and versatile as modern aircraft carriers, however. They do not have the wide-ranging surveillance and long-range strike capability inherent to an aircraft carrier with as many as 90 manned aircraft. Nevertheless, if fitted with a flight deck and support facility for about 12 helicopters or V/STOL aircraft, the battleships--along with a complement of air defense ships--could operate with independence and effectiveness in appropriate missions, using cruise missiles against distant targets. Otherwise they would have to operate with the support of land-based aircraft, in a manner similar to that of

current Soviet naval forces, or along with ships capable of supporting aircraft.

This option, which results in a Navy with 12 deployable aircraft carriers and four battleships, is clearly not as powerful as the force of 15 deployable aircraft carriers and four battleships that would eventually result from the Administration's program. It would, however, provide additional deployment forces in a timely manner and at a substantially lower cost.

Restructure the Modernization of Naval Air Defenses. In the 1960s, the Navy embarked on an ambitious program to improve naval air defense systems to combat Soviet developments in tactical missiles. Today the centerpiece of that program is the CG-47-class cruiser with the AEGIS air defense system, featuring a new and more capable tracking radar and other improvements. The Navy is also procuring a new anti-air warfare (AAW) missile for surface ships called the Standard Missile 2 (SM-2), which incorporates substantial improvements (including longer-range and multiple-target engagement capability) over an earlier version called the Standard Missile 1 (SM-1). Most AAW systems in the Navy today use the SM-1 missile and are incompatible with the SM-2.

In fact, the only new ships currently in existence or authorized that are compatible with the SM-2 missile are the CG-47-class AEGIS cruisers that will cost over \$1 billion each. 10/ The Administration may propose procuring 17 CG-47s over the next five years at the rate of 3 to 4 per year. There is no current program to provide an SM-2 capability to the DD-963-class destroyers or to the FFG-7-class frigates that form the bulk of recent surface combatant construction. The likely Administration program, therefore, will result in the SM-2 missile and the most recent air defense technology being used by only a relatively small number of very expensive new ships plus some older Tartar and Terrier ships. 11/

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10. The SM-2 missile would also be used by the DDGX, a ship still being designed and not yet authorized, but expected to cost only marginally less than ships of the CG-47 class.
  11. The SM-2 missile can be backfitted into ships equipped with the older Tartar and Terrier AAW systems. Such modification results in a substantial improvement in AAW capability, but many of these ships are now well into their second decade of service.

The Congress could choose an alternative approach to naval air defense modernization, proceeding with the AEGIS program on a somewhat smaller scale, and using the savings to improve substantially air defense capabilities on a much larger number of surface combatants. The Congress could, for example, limit procurement of CG-47 AEGIS cruisers over the next five years to 10, rather than 17 that may be planned. Program savings could be used to develop a new terminal engagement radar (TER)--a fire control system for which prototypes exist--and field it aboard DD-963 and FFG-7 combatants. Such a fire control system would include an electronically controlled radar that can scan wide areas, track targets, and illuminate those targets for the attacking SM-2 missiles. Working with currently installed air search radars, it would permit multiple target engagement on a much larger fleet of ships. <sup>12/</sup> This new fire control system would be installed aboard 31 DD-963s (which would also be equipped with a vertical launch system) as well as aboard approximately 50 FFG-7-class frigates. This alternative would also procure 4,300 additional SM-2 missiles for this expanded air defense fleet. Together, these actions would add 81 ships with modern multiple-target, long-range air defense capability, giving the Navy greater flexibility to deploy its forces worldwide against a distributed Soviet threat while still providing a substantial fleet of AEGIS cruisers.

Moreover, when developed, a terminal engagement radar could be retrofitted into the AEGIS system and the new package would be even more capable than today's AEGIS. As such, the TER might be considered an important enhancement program for AEGIS, in addition to the benefit of improving older AAW systems.

While distributing air defense capability more widely, and perhaps improving AEGIS, this option, relative to the possible Administration approach, would reduce costs by \$9.2 billion in budget authority over the next five years (see Table III-3 and Table C-4 in Appendix C). Savings over the long run would be less because much of the added costs associated with this upgrade program would occur beyond the five-year period. Nonetheless,

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12. For a discussion of the terminal engagement radar, also known as the agile beam fire control system, see Congressional Budget Office, Naval Surface Combatants in the 1990s: Prospects and Possibilities (April 1981), pp. 28-33.

total program savings in constant 1983 dollars would still amount to about \$2 billion.

The primary adverse consequence of this alternative would be to create a temporary period in which fewer AEGIS ships were being deployed before the new air defense system had been fully developed and retrofitted aboard existing ships. It takes four to five years to build an AEGIS cruiser. It would likely take four to seven years to develop, test, and begin installing the new TER fire control system along with SM-2 missiles on DD-963s and FFG-7s.

Also, while the TER system would be a powerful improvement to existing systems, it lacks the operating potential of the full AEGIS system. Moreover, this option requires a package of research and development, procurement, and backfit initiatives that are uncertain in cost and schedule. Engineering development proposals have been offered by several defense contractors to the Navy, however, and an accelerated development might be able to proceed quickly.

#### Seeking Alternative Approaches to Accomplish Existing Missions

The cost and complexity of modern weapon systems has been a major concern of the Congress in recent years. Unit costs of some systems have skyrocketed, while at the same time questions continue to be raised about the effectiveness and reliability of some of the systems. Cost and complexity factors frequently induce the military services, faced with constrained budgets, to focus development and procurement efforts on a few systems, sometimes at the expense of less costly alternatives that could effectively complement major new systems and even sometimes replace them. Pursuing complementary or alternative programs might serve to limit total program costs. Such an approach rarely offers large budget savings immediately, however, since near-term development efforts are necessary at the same time that only marginal reductions can be imposed on major new systems. Nonetheless, the following section describes several alternatives to current programs that could eventually lower costs.

Procure Conventional Submarines to Complement Nuclear Attack Submarines. The Administration has established a force level goal of 100 nuclear attack submarines for the Navy. Currently, 86 nuclear attack submarines and 5 diesel-electric submarines are

in commission. In addition, 21 SSN-688-class nuclear attack submarines are under construction or authorized; so the Navy should reach its goal of 100 submarines in a few years. Starting in the mid-1980s, however, the force level will decline unless older submarines that are retired are replaced by adequate numbers of new submarines (4 ships per year for a 100-ship force, assuming a 25-year life, or 3-1/3 ships per year for a 30-year life). The Administration may propose authorizing two to four new SSN-688-class submarines per year at a cost of about \$740 million per ship. (Costs are those reported in the Congressional Data Sheets for the 1982 President's budget.) The Navy is committed to an all-nuclear attack submarine force and plans no purchase of new-generation diesel-electric submarines.

Nuclear-powered submarines enjoy substantial advantages because of their unlimited submerged endurance. Diesel-electric submarines can, however, be very effective in a number of important missions. These include submarine barrier operations and operations in shallow water where quietness and smaller size are particularly important. <sup>13/</sup> A modern diesel-electric submarine operating on its batteries is quieter than a nuclear submarine, an important advantage in undersea warfare. But the chief advantage of non-nuclear submarines is their substantially lower cost, on the order of one-fourth that of an SSN-688-class submarine. <sup>14/</sup> Although diesel-electric submarines cannot perform all of the

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13. CBO analysis suggests that, where 19 SSN-688 submarines are needed to perform barrier operations at the Greenland-Iceland-United Kingdom gap, it would take only 22 new-generation diesel-electric submarines to provide equal coverage. See Congressional Budget Office, Shaping the General Purpose Navy of the Eighties: Issues for Fiscal Years 1981-1985 (January 1980), especially pp. 127-40. That analysis concluded that new-generation diesel-electric submarines can be over two times more cost-effective in such barrier missions.
  14. A German shipbuilding firm, Howaldtswerke-Deutsche Werft, has formally offered to design and build a fully equipped diesel-electric submarine of 2,600 tons submerged displacement for the U.S. Navy for the price of \$200 million (in fiscal year 1981 dollars). The firm estimates that follow-on ships would cost about \$100 million each. To reflect possible cost

missions that might be undertaken by nuclear submarines, diesel-electric submarines could be assigned to barriers and other suitable missions, freeing nuclear submarines for more demanding tasks.

In view of the advantage of a mixed force, the Congress could choose to cut back procurement of SSN-688-class nuclear attack submarines by one per year over the next five years and use those savings to finance development and initial procurement of six new-generation diesel-electric submarines. Such an approach might provide roughly equal coverage on a barrier and, over the next five years, would save \$3.1 billion in budget authority (see Table III-3 and Table C-5 in Appendix C). Further savings would be possible, or more submarines could be bought with the same funds, if more diesel-electric submarines were substituted for nuclear vessels. For example, over the long run, 20 diesel-electric submarines could be substituted for 10 nuclear submarines and still save over \$4 billion (in constant 1983 dollars).

This program would require cutting back SSN-688 production in the near term in favor of an alternative that would take several years to develop and field. (Conventional diesel-electric submarines are, however, routinely built in other countries and take about half as long to construct as nuclear-powered submarines.) Moreover, conventional submarines could not be a complete substitute for nuclear, since they clearly cannot match the latter in speed and endurance. Fielding a mixed force, however, would free the nuclear submarines for more demanding missions suited to their particular strengths.

Limit M1 Tank Procurement and Supplement It with M60s. The centerpiece of Army equipment modernization plans is the new M1 tank, intended to replace production of the M60 that has been the Army's main battle tank for the past 20 years. Though the M60 is a very capable tank, the M1 has improved armor and armament and is

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growth, this report assumed \$250 million for the lead ship and \$150 million apiece for follow-on ships. Most likely, were the Navy to pursue such a program, a U.S. shipbuilder would buy the appropriate technical data and licenses to produce the submarines in this country.

judged to have substantially better combat effectiveness than even the M60A3, the latest version of the M60. 15/

While potentially much superior to the M60A3, the M1 has had a tortured development history. It has had persistent reliability and maintenance problems, and has not yet met design specifications in some critical areas. The latest report on the M1 in the official Selected Acquisition Report (SAR) indicates it is still having power train and track durability problems. In addition, the factories have experienced production difficulties that have, to date, limited output to about half of planned rates. Moreover, production costs have increased dramatically: the current SAR places unit production costs in inflated dollars at 97 percent above initial program estimates. 16/

Nonetheless, the Army will increase M1 tank production in 1982 and stop producing M60 tanks except for foreign military sales. The 1982 budget provides for 665 M1s. As of the issuance of this report, Administration plans for 1983 and beyond were not publicly available. Plans announced earlier called for production of 802 M1 tanks in 1983, increasing to 1,080 a year from 1984 through 1987.

As an alternative to these possible Administration plans, the Congress could direct that the Army not increase M1 production above the rate of 720 per year, which was the original goal for this year's production. To compensate for inventory shortfalls, the Congress could direct continued production of the M60A3 tank, at a rate of 30 per month, beginning in 1983. 17/ As a

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15. The M60 upgrade program installs a new ballistics computer, a thermal night sight, and a laser range finder for the M60A1 fire control system.
  16. The 97 percent increase is relative to costs estimated at the time when the decision was made to commence full-scale engineering development.
  17. Thirty per month is the smallest economical buy for the M60A3. This means that total 1983 tank production under this alternative would be higher than under possible Administration plans.

consequence, total tank production in 1984-1987 would equal planned Army tank production, while the 1983 rate would be slightly higher. Relative to possible Administration plans these two actions would save approximately \$1.1 billion in budget authority over the next five years, though there will be some additional costs in 1983 (see Table III-3 and Table C-6 in Appendix C). Further savings could be achieved if the Congress elects to forgo the M60A1 upgrade program now underway. 18/

Choosing this option would ensure continued production of the M60, which might otherwise be terminated in 1982 because of too few requests from foreign customers. Retaining M60 production capability might be important if problems with the M1 are not adequately resolved.

Such an alternative would, however, delay Army tank modernization efforts. While tank inventories would be slightly higher, the tank arsenal in the late 1980s would be composed of 1,522 fewer new-generation M1s, 23 percent fewer than under possible Administration plans. The Army could eventually compensate by extending the production run of the M1 beyond current plans. By 1987, however, the Army would have fewer M1s than originally planned.

Alter the Composition of the Infantry Fighting Vehicle Program. For years the Army has been developing a new infantry fighting vehicle, designated the M2, to replace the old M113 armored personnel carrier. The M2 would be a substantial improvement over the old M113, which provided armored protection for infantry squadrons but had little offensive striking power of its own. The M2, by way of contrast, carries both the TOW antitank missile and a new 25-millimeter automatic cannon. It will also have the speed necessary to keep pace with the M1 tank.

While clearly capable, the M2 has experienced large cost increases in recent years. Indeed, the Congress has already directed the Defense Department to explore the feasibility of a second prime contractor in the hope that competition could hold down costs.

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18. The current program calls for upgrade of M60A1 tanks to M60A3s at the rate of 360 per year and an annual cost of \$177 million in constant 1983 dollars.

Despite these cost problems, the likely production program, which may be at a rate of about 60 per month through 1984, could increase to close to about 90 per month in later years. The Congress could alter the Administration program for the M2, choosing to limit production in 1983 and 1984 to 30 per month and to 50 per month in 1985 and beyond. The maximum production capacity of current manufacturing facilities is 30 per month with one shift and 50 with two. In addition to reducing procurement cost, this option would avoid approximately \$30 million of funds needed to expand M2 production facilities to achieve a production rate of 90 per month.

To compensate for fewer M2s, the Congress could direct a somewhat different approach to the fighting vehicle. Elements within DoD have examined plans to modify the M113 to improve its effectiveness as an alternative to the M2 fighting vehicle. In particular, the Army could replace one fighting vehicle in each infantry squad with two M113s, equipping one M113 with an improved TOW antitank missile and the other with a 25-millimeter cannon similar to that installed on the M2. This approach would capture much of the fighting capability of the M2, and procurement costs for two modified M113s, equipped as noted above, are estimated to be \$0.4 million less than for the one M2 they would replace. Moreover, the operating cost of a battalion equipped with the two modified M113s per squad should be roughly equivalent to that of a battalion equipped with one M2 per squad.

This alternative, then, would purchase 30 M2s per month in 1983 and 1984 and 50 per month thereafter. In addition, the option would buy 80 modified M113s (40 of each type) per month through the five years. Savings relative to the possible Administration program would total \$1.0 billion in budget authority over the next five years (see Table III-3 and Table C-7 in Appendix C).

This alternative suggests a new battle concept for the Army that has not been fully explored for its potential advantages or problems. The alternative offers more vehicles and captures much of the M2's fighting capability. But coordinating two infantry fighting vehicles instead of one opens questions regarding battle management and command and control. Also, limiting production of the M2 would largely obviate developing a second producer for the vehicle so as to hold down costs. Nevertheless, the potential savings suggest that the alternative is worth exploring.

Revise the Navy Aircraft Modernization Program. The Navy is in the midst of a major program to modernize Navy and Marine Corps fighter and attack aircraft squadrons. The central component of this program is the F/A-18, a single aircraft designed to function either as a fighter or as an attack aircraft. <sup>19/</sup> It was originally developed as a low-cost complement to the more capable and expensive F-14 fighter, and is now intended as a long-term replacement for A-7s used in current light attack squadrons.

Program costs of the F/A-18, which is now entering initial production stages, have increased substantially since development was initiated in 1975. Total program unit costs for the original program have increased by over 60 percent in inflated dollars. The Secretary of the Navy has expressed concern over cost growth, though no program revisions have been suggested. In 1982, the F/A-18 is as expensive as the more capable F-14, though average unit costs for the F/A-18 will decline well below those for the F-14 once efficient production schedules are reached. The F/A-18, however, is and will remain significantly more expensive than the A-7E light attack aircraft it is to replace in carrier attack squadrons.

Current Navy plans call for purchase of 8 additional F-14 squadrons, 16 F/A-18 fighter squadrons (4 for the Navy, 12 for the Marine Corps), and 30 light attack squadrons equipped with the F/A-18.

The Congress could choose an alternative modernization plan that would cancel F-14 purchases after 1983 and replace them with F/A-18s. The alternative would also cancel F/A-18 procurement as light attack replacements for the A-7Es, and field a proposed improvement of the A-7 known as the A-7X. Relative to the possible Administration program, this alternative program would save \$6.7 billion in budget authority over the next five years (see Table III-3 and Table C-8 in Appendix C). Nor would savings be limited to just the next five years. By the time the entire modernization plan was completed, total savings would amount to about \$11 billion

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19. While a single F/A-18 is capable of either fighter or attack missions, training and operating requirements are sufficiently different so that the Navy, in effect, will field F/A-18 attack squadrons and F/A-18 fighter squadrons.

in constant 1983 dollars. This alternative might also result in lower operating costs, since the F-14 requires two persons in the cockpit and so is more expensive to operate than the single-seat F/A-18. If contractor estimates are correct, the A-7X would not cost more to operate than the F/A-18.

On attack missions, a force updated with the A-7X--rather than the F/A-18--would have more capability to deliver ordnance at all ranges beyond about 500 miles. The A-7X force would be about 10 percent less capable at shorter ranges. Though the Navy in the past has operated at shorter ranges, close-in ranges might be risky in the future because of the threat of attack on the carrier by patrol boats or land-based aircraft. The A-7X would also have a larger engine than the current A-7E as well as some updated electronic components, so that its survival prospects when under attack could approach that of the F/A-18.

Navy fighters have two basic missions--providing extended-range fleet air defense against hostile aircraft launching cruise missiles and acting as escorts for bombers. As an escort, the F/A-18 can generally match the F-14's performance. In the fleet air defense mission, the F/A-18 is not the equal of the F-14, which has greater speed, longer-range missiles and radar, and the ability to attack several hostile aircraft simultaneously. Since there currently are 18 F-14 squadrons, however, most carrier task forces would have some F-14s even under this option. Moreover, the F/A-18 has an added advantage over the F-14 in that it can be used for attack missions when combat situations permit or require it.

#### Changing Pay, Support, and Acquisition Policies

The rate of growth in defense spending could also be reduced by changes in pay and support policies, and by changes in the way DoD acquires its weapon systems. Indeed, about 38 percent of defense budget authority in 1982 will go for pay, allowances, retirement, and housing costs of civilian and military employees; another 19 percent will pay for operating and maintaining equipment and installations. This section addresses several policy changes that, if implemented in 1983, would lower pay, support, and acquisition costs.

Change Pay and Recruitment Policies. One of the most far-reaching changes would be a move away from the all-volunteer method

of attracting military recruits. A return to conscription would affect costs, though perhaps only modestly. If, for example, today's recruit pay rates were maintained and a lottery draft was implemented at the beginning of fiscal year 1983 to make up future shortfalls of volunteers, savings might amount to \$125 million in 1983 and \$150 million a year in later years. These estimates assume that numbers of military personnel in future years remain at today's levels. If numbers of personnel increase, instituting conscription could avoid substantially larger costs, since manning a larger all-volunteer force could require big pay hikes.

Savings under conscription would also be larger if the Congress cut recruit pay. In 1983, about \$4.3 billion will go for basic pay of enlisted persons with one or two years of service. If the Congress enacted conscription and reduced pay for these personnel by dropping enlistment bonuses and eliminating the special pay raises granted during the transition to the all-volunteer force, basic pay costs would go down by about \$1.5 billion a year. But higher turnover could raise training, travel, and other costs of first-term personnel by at least \$325 million annually. When these increases are coupled with an estimated \$75 million cost for Selective Service operations, net annual savings would amount to about \$1.1 billion.

Other pay policies might reduce costs even with the all-volunteer force. The recent increases in military pay and allowances--totaling about 30 percent over the last two years--have combined with other factors to improve military recruiting and retention substantially. Annual pay raises that keep pace with those in the private sector should be enough to maintain this improvement. Special increases in compensation above this "keep-pace" level are needed only for those with certain skills of which there is a shortage, such as engineers and nuclear-trained personnel. If any special increases in compensation, such as increases in health benefits or improved educational benefits, are granted to all military personnel, the Congress could hold down costs by reducing the annual pay raise enough to finance part or all of the added costs. Such a policy could still roughly maintain current levels of recruiting and retention. The extent of the savings would depend on the special increases in compensation that are proposed by the Administration.

Change Military Retirement Benefits. In 1982, the military retirement system will provide benefits for about 1.4 million

persons at a cost of about \$15 billion. Under this system, non-disability retirees earn benefits after 20 or more years of service irrespective of their age or whether they subsequently find employment in the private sector. Those having fewer than 20 years' active and reserve service earn no benefits. Five major studies, plus legislative proposals from two previous administrations, have recommended providing more of the total military compensation package "up front" rather than in retirement years. This would provide mid-career personnel with increased incentives to remain in the service, while reducing the incentive to leave the military immediately after completion of 20 years' service.

The Congress has moved compensation policies in these directions. Retirement benefits for new recruits have been reduced by changing the basis of calculating retirement pay, while retirement benefits for all persons have been reduced through changes in the cost-of-living adjustments provided each year. At the same time, cash bonuses available earlier in military careers have been increased.

The Congress could continue to restructure military retirement pay, perhaps through further limits on cost-of-living adjustments. For example, one option would provide half the regular cost-of-living increase for retirees under age 60, with a catch-up raise at age 60 to make up for the half raises (See Appendix A-050-c). Proponents argue that such a plan would provide incentives for longer careers, which may be desirable, particularly for officers. Such a plan might, however, have adverse effects on retention. Other incentives, such as larger reenlistment bonuses, may be needed to offset negative retention effects in key skills. Without offsets for costs of increased bonuses, which could only be estimated after detailed study, CBO estimates that five-year savings under this option would equal about \$3.8 billion. Savings would be delayed if the Congress protected all of today's retirees from any reductions.

The Congress could also phase in, over the next three years, the "high-3" method of calculating retirement pay (see Appendix A-050-b). In 1980, the Congress decided to base military retirement on average pay during the three years when it was highest, but applied the approach only to new recruits. If, over the next three years, high-3 was applied to all personnel, then five-year savings would total \$460 million. Such an option would bring the military into line with the Civil Service Retirement system quickly but could reduce overall retention by a modest amount.

The Congress could also modify the military retirement system by providing a uniform annuity for recent retirees and make similar changes for civil service retirees (see Appendix A-600-i). Because retirees receive cost-of-living adjustments based on the CPI rather than military wage increases, benefits paid to those who retired during the decade of the 1970s--when CPI increases were high but wage increases low--sometimes exceeded the amount paid to those who retire today with the same grade and years of service. The Congress could correct these differences by temporarily granting half the normal cost-of-living adjustment to those with higher benefits. Such an approach should save \$2.3 billion over the next five years for military retirement alone. Equity may argue for such a policy, since military wages did not keep up with the extraordinary price increases of the 1970s. But opponents would argue that this option represents inequitable treatment of some who served assuming that their retirement pay would be adjusted by the full amount of CPI increases.

Continue Restructuring of Military Bases. The Department of Defense manages over 5,000 installations and properties worldwide. The cost of operating and maintaining these facilities in fiscal year 1982 will be about \$20 billion. Since 1969, the department has taken more than 4,000 realignment and closure actions designed to provide a more efficient defense structure and to reduce base operating costs. Further actions may be possible. Indeed, this period of increasing defense budgets may be the best time to attempt these politically difficult changes.

Proponents of further base restructuring point to the wide variation in base operating support costs as an indication of the potential savings from such actions. For example, the cost per person assigned to a mission task at the most expensive base often exceeds that at an average base by three to one and sometimes much more--even after adjusting for base size and type of mission. While many factors influence such cost comparisons, the wide variation suggests that further efficiencies are possible. Proponents also contend that changes in the nation's strategic needs, force levels, and weapons technology demand modifications in the existing basing structure. Such realignments need not eliminate places for reserve unit training or reduce mobilization potential, since bases can be put into caretaker status.

Because estimated savings require detailed reviews of the situation at each base, CBO has no independent estimate of the

total savings possible from further base realignments. Over the past year, the Administration has initiated only a very limited number of realignment actions with small budgetary consequences and has not produced any comprehensive package of possible future realignment actions. Discussions have begun within the Administration on possible sale of surplus property held by all federal agencies, but no firm decisions have been reached.

Lacking any detailed plan at this time from the Administration, one basis for an estimate is the Department of Defense's March 1979 base realignment proposals affecting 157 military installations and activities. If the department pursues, and the Congress allows, the remaining realignments in this proposal, DoD estimates that total savings over the next five years would amount to \$520 million. These savings would result primarily from a reduction of about 2,700 military and 2,800 civilian positions. Few if any savings would occur in 1983 because of the added costs of construction, transferring employees, and avoiding economic dislocation.

While the continuing buildup in defense may increase the demand on previously underutilized facilities, the major opposition to base realignments stems from the economic dislocation they might produce in communities near the bases--often a cause of intense local concern. Measures can be taken, however, to mitigate this. The Department of Defense states that its Office of Economic Adjustment has been relatively successful in providing planning assistance and ensuring that federal grants and loans are directed to affected communities.

Improved Acquisition Procedures. In 1982, the Department of Defense will buy about \$140 billion in goods and services from the private sector. This cost could possibly be reduced, without eliminating any purchases, by improving acquisition procedures through one or more of the following approaches.

Encourage Competition in Defense Industries Through Second Sourcing: There is general agreement that competition holds down prices. One way to increase competition is "second sourcing," or the use of more than one contractor to manufacture a particular weapon. Some studies suggest that second sourcing could produce cost savings of as much as 30 percent for selected items. Although second sourcing is not appropriate for all weapon systems--in some cases, small buy sizes and high fixed production costs make it

impractical to have many competing suppliers--the Congress could require that the Defense Department consider it whenever formulating a procurement strategy. Current law encourages second sourcing only when it will improve the department's ability to produce weapons quickly during a wartime mobilization; the Congress could amend the law to encourage second sourcing wherever it might cut costs.

**Encourage Economical Buy Sizes:** The size of a buy is very important to defense costs. If contractors build facilities capable of producing weapons at a certain rate, but then produce fewer, this often results in much higher unit prices than planned. Because of the importance of economical buy sizes, the Congress might require a short report specifying the economical buy size for existing systems and the planned rate for proposed buys. To limit paperwork, such a report could be limited to major systems. Where proposed buys deviate from the economical rate, the report should note the reason and the unit cost at the economical buy level. Such a report would focus the department's attention on this important topic and allow the Congress to assess fully the costs of departures from economical buy rates.

Economical buy rates demand more than just managerial attention, however; they also require political courage. The Administration and the Congress must be willing to terminate a few programs in times of cutbacks, rather than stretching out many programs over a longer period.

**Foster Multiyear Procurement:** Multiyear procurement constitutes one of the Administration's major initiatives in the defense acquisition area. Multiyear contracts, which provide for buys over several years with substantial cancellation charges if the buys are not executed, could offer important benefits. They might encourage cheaper bulk buys of parts, foster a stable work force, and facilitate stockpiling of materials needed to avoid production delays. Such benefits might cut costs by 5 to 10 percent. Last year the Congress facilitated use of multiyear contracting by raising the amount that can be paid to a contractor if a multiyear contract is abrogated, and by other revisions in the law.

**Improve Congressional Oversight of Weapons Cost Increases:** The options just discussed may help control weapons prices and so keep down costs. But, at its heart, the problem of weapons cost growth is one of incentives. Officials at the Department of

Defense, and defense contractors, may be tempted to keep initial cost projections low in order to increase the chances of obtaining funding for their programs. The Congress alone cannot change these incentives; the Department of Defense must take the lead in providing needed management. But the Congress may be able to help through a closer scrutiny of prices.

One approach, included in the last year's defense authorization bill, requires DoD to report to the Congress whenever the program unit cost of a weapons system--as reflected in the Selected Acquisition Reports, or SARs--increases by more than 10 percent for systems in production or 15 percent for systems in research and development. But the SARs may come too late to allow the Congress to consider alternatives to weapon systems that have grown sharply in cost. The Congress could seek earlier warning, perhaps by requiring that DoD include in the SARs some of the more timely cost and performance data now submitted by contractors to the Department of Defense. Early warning of overruns could trigger early Congressional debate over whether the weapon should be procured at the higher cost, or whether alternatives should be pursued.

Options like the four just discussed could eventually reduce costs substantially, but it is difficult to say by how much. Potential savings depend on the peculiarities of individual weapons and must be estimated by the Department of Defense and its contractors. Nonetheless, even small savings in procurement add up. A reduction of 1 percent in overall spending for procurement and research and development would cut costs by about \$1.0 billion in budget authority in 1983 and a total of \$5.7 billion over the next five years.

#### CONCLUDING COMMENTS

The preceding discussion has focused on several strategies that the Congress could use to limit increases in defense spending over the next five years. The size of the defense budget points to the importance of decisions about defense spending. The national defense budget function is currently second in size only to the income security budget function (function 600). By 1987, if CBO's economic assumptions and real growth of 7 percent a year for defense are realized, the defense function will be the largest single function.